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EXAMINER

ABELSON, RONALD B

ART UNIT	PAPER NUMBER
2666	10

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,786

Applicant(s)

MERANI ET AL.

Examiner

Ronald Abelson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 24-35 is/are allowed.
- 6) ☒ Claim(s) 5-7, 16-18, 24, 36, 37, 41 and 45-48 is/are rejected.
- 7) ☐ Claim(s) 8-15, 19-23, 38-40 and 42-44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5 and 9.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

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Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 5-7, 16-18, 36, 37, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US 6,538,869).

claim 36 Lee teaches distributing to each of one or more highest speed grade ports, while counting, permission to release one of equal amounts of data (fig. 1 box 12 distributes OC-3 signals in a STS-1 format, col. 4 lines 33-35); and distributing to each of one or more lower speed grades, while continuing the counting, permission to release one of the equal amounts of data until the counting has counted across a counting modulo (fig. 1 box 18 converts STS-1 signals to DS0 format, col. 4 lines 35-37). Regarding counting, the timing information is provided by

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the central office that is sending the OC-3 data to the optical interface.

Lee teaches each of the lower speed grade ports (fig. 1: STS-1, DS0 ports) consumes less bandwidth than each of the one or more highest speed ports (fig. 1: OC-3 ports, col. 4 lines 21-22).

Regarding the limitation the counting modulo establishing a temporal width of the scheduling cycle that results in one of the equal amounts of data per scheduling cycle being the amount of bandwidth allocated to each of the one or more highest speed grade ports, Lee fig. 1 shows each OC-3 signal being evenly into 3 STS-1 signals and each STS-1 signal being evenly distributed to multiple DS0 signals (col. 4 lines 33-37, 21-22).

Regarding claim 37, recognizing a highest speed grade as an active speed grade prior to distributing to each of the one or more highest speed grade ports, in combination with all the other limitations listed in the claim. In the system of Lee fig. 1, the highest speed grade is OC-3. If the data were not distributed to the highest speed grade ports first, the system would not work assuming the data is transmission path is OC-3 to DS0. The OC-3 ports must be

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first active since if this were not the case, there would not be any data for the lower speed ports to transmit.

Regarding claim 41, recognizing a particular lower speed grade as an active speed grade prior to the distributing each of one or more lower speed grade ports permission to release one of the equal amounts of data (fig. 1: box 18 release DS0 data).

Regarding claims 5 and 16, Lee teaches a method and apparatus for a network node (fig. 1 central office associated with OC-3 input signals 14 and 16) that executes a series of scheduling cycles in order to allocate switching or routing bandwidth within a networking system (fig. 1 box 2, col. 3 lines 56-59), wherein a highest speed grade (fig. 1 OC-3) is identified for a highest amount of allocated bandwidth, and wherein lower speed grades are identified for speeds that are less than the highest amount of allocated bandwidth (fig. 1: STS-3, STS-1, and DS1/DS0), wherein each of the scheduling cycles is divided into equal amounts of data (col. 4 lines 33-37, lines 21-22).

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Although Lee teaches 2 OC-3 connections can carry up to 4096 DS0 signals (col. 4 lines 21-22) the reference is silent why this relationship exists.

Newton teaches that a single DS-3 signal at 44.736 Mbps supports 672 voice grade digital channels of 64 kbps (note voice grade digital channels are DS0 channels). Note 672 voice grade digital channels at 64 kbps gives a total bandwidth of 43.008 Mbps. Note the allocated bandwidth for the single DS-3 signal is greater than the bandwidth allocated to the voice grade digital channels. Newton states that the additional bps are attributable to optical processing overhead (Newton: pg. 534-535). Likewise Lee teaches 2 OC-3 connections can carry up to 4096 DS0 signals. Note, since OC-3 operates at 155.02 Mbps, 2 OC-3 require 301.04 Mbps and 4096 DS0 signals require 262.144 Mbps.

In the claim, the applicant provides the limitation, a DACS wherein each of the speed grades has a respective bandwidth allocation associated with a respective length of time, wherein the length of time is one of the scheduling cycles for the bandwidth allocation for the highest speed grade, wherein the length of time is more than one of the scheduling cycles for each bandwidth allocation for the

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lower speed grades, wherein the lower speed grades and the highest speed grades are serviced by the node.

Note, the applicant is merely stating that bandwidth allocation and hence the servicing cycle are proportional to data rate. Newton explicitly shows this relationship this relationship that was stated by Lee.

Regarding claims 6 and 17, the length of time for the bandwidth allocation for the highest speed grade is determined with a counting modulo, comprising the minimum integer derived from B divided by X wherein B is switching or routing capacity of the networking node and X is the highest amount of allocated bandwidth. Referring to fig. 1 the highest speed grade is OC-3, which is 155.02 Mbps. Given two OC-3 inputs to the switch (fig. 1, box 24), the switch must operate at a data rate of at least 300.04 Mbps. If this were not the case, the system would not work. Note, the switch operating at a data rate of at least 300.04 Mbps this is consistent with two OC-3 being able to carry 4096 DS0 signals (Lee col. 4 lines 21-22).

Regarding claims 7 and 18, wherein the length of time for each respective bandwidth allocation for the lower

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speed grades is determined with a counting modulo, comprising k times x_{n-1} wherein k is how many lower speed grade bandwidth allocations can be provided by a next highest speed grade, and wherein x_{n-1} is a counting modulo for a next highest speed grade. See relationship where 2 OC-3 lines may support 4096 DS0 lines.

3. Claims 45-48 rejected under 35 U.S.C. 102(e) as being anticipated by Miyamoto (US 6,618,381).

Miyamoto teaches a method and apparatus for scheduling in a network node (fig. 2a,b).

The system comprises setting an active speed grade to a highest speed grade (fig. 2a,b, High Priority Level).

The system comprises servicing as much as possible of a servicing cycle of the active speed grade until a count for the highest speed grade has timed out (fig. 2a,b, col. 5 lines 1-12). Note, the applicant's time period of service corresponds to the weight given to a particular class in Miyamoto.

The system comprises if the count for the highest speed grade has timed out, then setting the active speed

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grade to the highest speed grade that has not timed out and repeating (fig. 1a,b, col. 5 lines 7-15).

Regarding the limitation if the servicing cycle of the active speed grade has been fully serviced and the count for the highest speed grade has not timed out, then setting the active speed grade to a lower speed grade that is a highest speed grade having a servicing cycle that has not been fully serviced and repeating the examiner maintains this limitation is taught by Miyamoto (fig. 1a,b, the scheduler can read out the user's information cell in accordance with the weight corresponding to the priority levels, col. 5 lines 7-15). It would be obvious to one of ordinary skill in the art if the buffer were empty to process the next highest buffer. Miyamoto teaches that the cells can be read out in accordance with the weight corresponding to the priority levels. Miyamoto does not state that the scheduling periods must remain fixed even if higher buffers are empty.

Regarding claim 46, the servicing cycle comprises a plurality of ports (fig. 2a 51a-c).

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Regarding claim 47, the servicing cycle is represented as a linked list (fig. 2a). Note, the servicing cycle recursively goes from high to middle to low priority and then repeats.

Regarding claim 48, the servicing as much as possible of a servicing cycle of the active speed grade until a count for the highest speed grade has timed out comprises releasing packets one-by-one (read out user's information cell, col. 1 lines 1-6) identified by a linked list (see explanation for linked list in claim 47) until the count for the highest speed grade has time out (see claim 45 the applicant's time period of service corresponds to the weight given to a particular class in Miyamoto).

Allowable Subject Matter

4. Claims 24-35 are allowed.
5. Claims 8-15, 19-23, 25-35, and 38-40, and 42-44 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Regarding claims 8 and 19, the closest art of reference is Lee. Lee teaches a DACS (fig. 1). Nothing in the prior art of the record teaches or fairly suggests queueing packet identifiers in a DACS, in combination with all the other limitations listed in the claim.

Regarding claim 24, the closest art of reference is Lee. Lee teaches a DACS (fig. 1). Nothing in the prior art of the record teaches or fairly suggests a DACs system comprising one or more queues for queueing packet identifiers, in combination with all the other limitations listed in the claim.

Regarding claim 38, the closest art of reference is Lee. Lee teaches a DACS (fig. 1). Nothing in the prior art of the record teaches or fairly suggests reading from a memory each data entry within a circular link list, each of the one or more highest speed grade ports represented by one of the data entries within the circular link list, in combination with all the other limitations listed in the claim.

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Regarding claim 42, the closest art of reference is Lee. Lee teaches a DACS (fig. 1).). Nothing in the prior art of the record teaches or fairly suggests circular linked lists, in combination with all the other limitations listed in the claim.

Response to Arguments

6. Applicant's arguments with respect to amended independent claims 5, 16, 24, 36, and 45 have been considered but are moot in view of the new ground(s) of rejection. The examiner agrees with the applicant's contention that the prior art does not teach the amended independent claims (see arguments pgs. 18-26). Therefore, an updated search was performed.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Abelson whose telephone number is (703) 306-5622. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (703) 308-5463. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RA

Ronald Abelson
Examiner
Art Unit 2666

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